Active Gaming and Energy Expenditure in Healthy Adults

Christopher Carey, Keith Naugle, Tom Ohlman, Alan Mikesky, Kelly Naugle
Department of Kinesiology, Pain and Physical Activity Laboratory
Indiana University Purdue University Indianapolis

The rise in sedentary behavior in US society, along with the associated health risks, makes it necessary to find effective solutions to increase physical activity at all levels. Studies on active gaming have shown promising results in the use of active gaming as a viable exercise tool that combines physical activity with entertainment. However, the research is still mixed on whether active games can elicit similar responses as traditional cardiovascular exercise, such as jogging on a treadmill. This study examined whether participants playing active games could reach a moderate intensity level as defined by the American College of Sports Medicine as 3.0 METs while playing with and without specific instructions designed to maximize physical activity. Twenty young adult participants completed one training session and four experimental sessions. During each session, participants played two 15-minute periods of either Kinect tennis, Kinect boxing, Wii tennis, and Wii boxing. In period one, participants played at a self-selected intensity. During period two, participants were given specific instructions on how to play which were designed to maximize movement during play and down time. During game play, participants wore a portable gas (VO_2/VCO_2) analyzer to measure energy expenditure. Metabolic equivalents (METS) were analyzed with a repeated measures ANOVA. During period 1, Kinect boxing was able to elicit the highest METs, 3.097±0.3, from the participants. METS during period 2 was significantly greater than during period 1 across all games ($p<.001$). Participants were able to reach higher than 3.0 METs while playing each of the games during period 2. Regardless of the period, Kinect boxing elicited greater METS than Wii boxing and Wii Tennis ($P<.001$). This shows evidence that active gaming not only can elicit a moderate intensity level of physical activity, but that specialized instructions can enhance the effects of the active games.